



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/773,478	01/31/2001	Huanzhao Zeng	10004431-1	4124

7590 06/16/2004
HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

SUKHAPHADHANA, CHRISTOPHER T

ART UNIT PAPER NUMBER

2625

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/773,478	Applicant(s) ZENG, HUANZHAO	
	Examiner Christopher T. Sukhaphadhana	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Communication

1. The Request for Reconsideration filed 19 April 2004 has been entered in full.

Response to Arguments

2. Applicant's arguments regarding the Zeng rejection of **claim 1** in the last full paragraph on page 2 of the Request filed 19 April 2004 have been fully considered but they are not persuasive.

3. Applicant argues in substance that:

- a. Zeng fails to show or suggest converting an input color space representation of a color into a composite color space representation of the color because Zeng converts into multiple device-independent color spaces, not a single composite color space.

Examiner respectfully disagrees. In the first paragraph of Applicant's Summary of the Invention on page 2, Applicant describes a composite color space as "having a number of color space portions and a number of transition portions between adjacent ones of the color space portions." As presented in the previous Office Action, Zeng discloses a composite color space in Fig 4 on page 305. Zeng's R, G, and B regions correspond to Applicant's color space portions, Zeng's R_G, G_B, and B_R regions correspond to Applicant's transition portions, and the adjacency limitation being evident from the figure. Note also that Fig 4 is in the context of gamut mapping, a conversion from one color space to another. Thus, the limitation is met.

Art Unit: 2625

4. Applicant's arguments regarding the Zeng rejection of **claim 2** in the second-to-last full paragraph on page 3 of the Request filed 19 April 2004 have been fully considered but they are not persuasive.

5. Applicant argues in substance that:

b. Zeng performs gamut mapping in multiple color spaces, not a single composite color space.

Examiner respectfully disagrees. In addition to the argument already present for claim 1, Zeng presents gamut mapping with the composite color space represented by Fig 4. Thus, the limitation is met.

6. Applicant's arguments regarding the Ellson rejection of **claim 1** in the middle of page 4 of the Request filed 19 April 2004 have been fully considered but they are not persuasive.

7. Applicant argues in substance that:

c. Ellson fails to show or suggest converting an input color space representation of a color into a composite color space representation of the color because Ellson, Fig 9 and 10, each show two separate color spaces: CRT and printer.

Examiner respectfully disagrees. Ellson's composite color space is not the union of the source (monitor) and destination (XL7700) color gamuts. Rather, as pointed out in the last line of the rejection, Ellson's composite color space is the CIELAB color space of which the source and destination color gamuts are subspaces. The CIELAB color spaces represented by Fig 9 and 10 have color space portions (the source and destination color gamut areas not in common) adjacent to transition portions (the source and destination color gamut areas in common). Thus, the limitation is met.

Art Unit: 2625

8. Applicant's arguments regarding the Ellson rejection of **claim 2** in the paragraph bridging pages 4 and 5 of the Request filed 19 April 2004 have been fully considered but they are not persuasive.

9. Applicant argues in substance that:

d. Ellson fails to show or suggest performing gamut mapping in a single composite color space because Ellson fails to show a single composition color space within which gamut mapping is performed.

Examiner respectfully disagrees. As argued in claim 1, the CIELAB color space represented in Fig 9 and 10 meets Applicant's description of a composite color space. Furthermore, Ellson, col 8, lines 33-36, state: "FIGS. 9 and 10 show slices in the CIELAB color space in which colors in the RGB video gamut are mapped to colors in the output color gamut using a three-dimensional look-up table generated with the preferred embodiment of this invention." Therefore, Ellson, Fig 9 and 10, show performing gamut mapping in a single composite color space, as specified.

Preliminary Matters

10. In order to present the best rejections, Examiner is withdrawing the prior art rejections under Cecchi and Bhattacharjya without consideration of the merits of Applicant's arguments.

Claim Rejections - 35 USC § 102

11. The following rejections are maintained from the previous Office Action in light of the Response to Arguments presented above.

Art Unit: 2625

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. **Claims 1-20** are rejected under 35 U.S.C. 102(b) as being anticipated by Zheng (*Gamut Mapping in Multiple Color Spaces*, 25-28 Jan 2000, cited in IDS filed 31 January 2001, “Zheng”).

14. In regards to **claim 1**, Zheng discloses a method for color processing (page 301, abstract), comprising the steps of: defining a composite color space (page 305, Fig 4) in a memory of a computer system, the composite color space having a number of color space portions (Fig 4, *B region*, *G region*, and *R region*) and a number of transition portions (Fig 4, *G_B region*, *R_G region*, and *B_R region*) between adjacent ones of the color space portions; and converting (paragraph bridging page 302-303) an input color space representation of a color (gamut mapping from monitor display) into a composite color space representation (page 305, Fig 4) of the color in the computer system.

15. In regards to **claim 2**, Zheng discloses in section 2, on page 302, the method further comprising the step of gamut mapping the color in the composite color space to obtain a representation of the color in the composite color space that is reproducible by an output device.

Art Unit: 2625

16. In regards to **claim 3**, Zheng further discloses in Fig 3 (CIE $L^*u^*v^*$ and CIE $L^*a^*b^*$) and section 5 on page 305, the step of defining the composite color space further comprising the step of defining each of the color space portions as a portion of a predefined color space.

17. In regards to **claim 4**, Zheng further discloses in the first line on page 306 (weighting of each color space), the step of defining the composite color space further comprising the step of defining a color space within each of the transition portions as a hybrid of the color space portions adjacent thereto.

18. In regards to **claim 5**, Zheng further discloses the step of converting an input color space representation of the color into the composite color space representation of the color in the computer system further comprises the steps of: defining a number of color space conversions (page 306, line 3) associated with a respective number of hue angles ranges (page 306, lines 1-2) to convert the input color space representation of the color into the composite color space representation of the color (Fig 4, page 305); identifying (paragraph bridging page 303-304) one of the color space conversions corresponding to a hue angle associated with the color; and converting (paragraph bridging page 303-304 and section 5, page 304) the input color space representation to the composite color space representation of the color based on the respective color space conversion.

19. In regards to **claim 6**, Zheng further discloses in the first line and Fig 3, on page 305, the step of converting the input color space representation to the composite color space representation of the color based on the respective color space conversion further comprising the step of calculating the composite color space representation in one of the transition portions as a weighted sum of the color space representations of adjacent ones of the color space portions.

Art Unit: 2625

20. In regards to **claims 7-12**, all the elements set forth in these claims have been addressed in the arguments of claims 1-6, respectively.

21. In regards to **claims 13-16**, all the elements set forth in these claims have been addressed in the arguments of claims 1-4, respectively.

22. In regards to **claims 17-20**, all the elements set forth in these claims have been addressed in the arguments of claims 1-4, respectively.

23. **Claims 1-4, 7-10, and 13-20** are rejected under 35 U.S.C. 102(b) as being anticipated by Ellson et al (U.S. Patent 5,583,666, newly cited, "Ellson").

24. In regards to **claim 1**, Ellson discloses a method for color processing (Fig 3), comprising the steps of: defining a composite color space (Fig 9 and Fig 10) in a memory of a computer system, the composite color space having a number of color space portions (XL7700 not monitor and monitor not XL770, Fig 9) and a number of transition portions ($XL7700 \cap \text{monitor}$, Fig 9) between adjacent ones of the color space portions; and converting (col 4, lines 49-64) an input color space representation of a color (monitor RGB) into a composite color space representation (CIELAB, Fig 9 and 10) of the color in the computer system.

Note that the following figures illustrate the color space portions (ECSP) and the transition portions (ETSP) as represented in Fig 9 of Ellson (bold added).

Art Unit: 2625

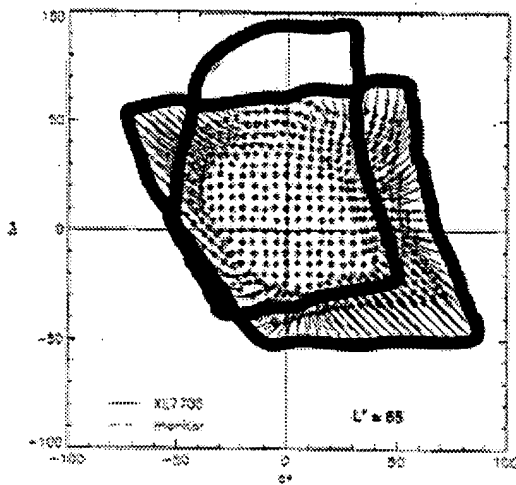


Fig. 9

ECSP: Ellson color space portion (areas in bold)

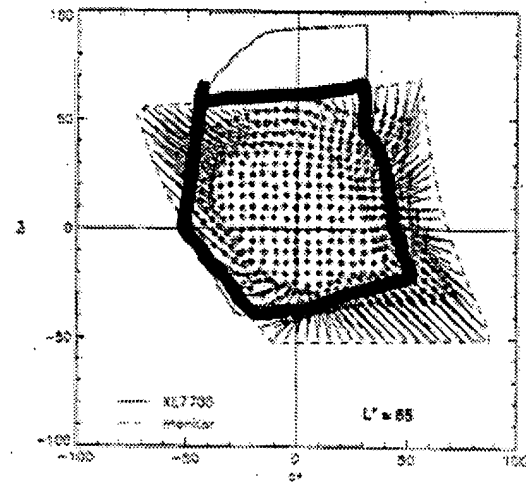


Fig. 9

ETSP: Ellson transition space portion (area in bold)

Further note that the ETSP is “transition space” because points outside the ETSP are “transitioned” or mapped into the ETSP. Also, ECSP is color space portion because it is a defined subspace of the CIELAB color space. The ECSP portions are the areas of the color gamuts that are inside either the XL7700 color space or the monitor color space, but not inside both. The ETSP portion is the area of the color gamuts that are inside both the XL7700 color space and the monitor color space.

25. In regards to **claim 2**, Ellson discloses in Fig 9 and 10 and col 8, lines 18-50, the method further comprising the step of gamut mapping the color in the composite color space to obtain a representation of the color in the composite color space that is reproducible by an output device.

26. In regards to **claim 3**, Ellson further discloses in Fig 9 and 10, the step of defining the composite color space further comprising the step of defining each of the color space portions as

Art Unit: 2625

a portion of a predefined color space. Note that as indicated in the ECSP figure above, each portion of the ECSP is defined in relation to the predefined XL7700 and monitor color gamuts.

27. In regards to **claim 4**, Ellson further discloses in Fig 9 and 10, the step of defining the composite color space further comprising the step of defining a color space within each of the transition portions as a hybrid of the color space portions adjacent thereto. Note that the ETSP is the area of the color space common to both the XL7700 and monitor color spaces.

28. In regards to **claims 7-10, 13-16, and 17-20**, for each of these groups, all the elements set forth in these claims have been addressed in the arguments of claims 1-4.

Conclusion

29. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 2625

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher T. Sukhaphadhana whose telephone number is (703) 306-4148. The examiner can normally be reached on 9a-5p M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CTS

CTS



BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600